

## ABSTRACT

A method of synthesizing a CO<sub>2</sub>-philic analog of a CO<sub>2</sub>-phobic compound, includes the step of: reacting the CO<sub>2</sub>-phobic compound with a CO<sub>2</sub>-philic compound selected from the group of a polyether substituted with at least one side group including preferably a Lewis base, a polycarbonate, a polycarbonate substituted with at least one side group including preferably a Lewis base, a vinyl polymer substituted with at least one side group including preferably a Lewis base a poly(ether-ester) or a poly(ether-ester) substituted with at least one side group including preferably a Lewis base, to create the CO<sub>2</sub>-philic analog. A method of synthesizing a CO<sub>2</sub>-phile includes the step of copolymerizing at least two monomers, wherein a polymer formed from homopolymerization of one of the monomers has a T<sub>g</sub> of less than approximately 250 K and a steric factor less than approximately 1.8, at least one of the monomers contains a group that results in a pendant group from the CO<sub>2</sub>-phile backbone that contains a Lewis base group, and the resultant CO<sub>2</sub>-phile does not contain both hydrogen bond donors and acceptors.